Department of Health & Human Services
DHHS
NEBRASKA

Division of Public Health
Office of Health Statistics

SYNDROMIC SURVEILLANCE EVENT DETECTION OF NEBRASKA (SSEDON)

HL7 2.5.1 IMPLEMENTATION GUIDE

FOR EMERGENCY DEPARTMENT, INPATIENT, AND OUTPATIENT DATA SETS

Prepared by: Jesse Clarke
Sandra Gonzalez, PhD
Gary White

Date: 06/26/2015

Version: 2.06

Contents

Change Log

The following is a list of changes made to this document.

Revision	Date	Author	Notes
2.00	3/27/2015	Jesse Clarke, Sandra Gonzalez, & Gary White	Release of Implementation Guide v.2.00.
2.01	3/30/2015	Jesse Clarke	Added clinical impression to OBX elements and examples.
2.02	4/03/2015	Jesse Clarke	Added XAD to list of acceptable values in OBX-2 (see OBX-2: Value Type) and updated PID-11 example.
2.03	4/08/2015	Jesse Clarke	Added blood pressure units (see Other Units of Measure) and examples (see Blood Pressure).
2.04	4/15/2015	Jesse Clarke	Added clarification on patient age for patients less than two years of age (see Patient Age).
2.05	5/14/2015	Gary White	Added PR1, IN1 and AL1 segments to ADT_A01 and ADT_A03 segment order (see HL7 Message Structure)
2.06	7/7/2015	Gary White	Added GT1 segment to segment order (see HL7 Message Structure)

Introduction

Syndromic Surveillance is a core component and helps the Nebraska Department of Health and Human Services (NDHHS) Office of Epidemiology's ability to detect both non-infectious and infectious causes of illness, community-wide disease outbreaks and bioterrorism events, and to analyze chronic disease indicators. NDHHS will use chief complaint, demographic, and clinical information from HL7 version 2.5.1 Admit-Discharge-Transfer (ADT) messages to provide an early warning system for public health emergencies, provide indicators for chronic disease surveillance and analysis, and provide general public health surveillance and analysis. The data collection portion of this system is called the Syndromic Surveillance Event Detection of Nebraska (SSEDON).

Scope of This Document

The General Transfer Specification (GTS) documented here supports automated exchange of data between SSEDON and external systems. This allows both the patient and clinical information to be available in both systems, so as to avoid the need to enter data twice. The remainder of this document specifies how HL7 file messages are constructed for the purposes of SSEDON. It covers only a small subset of the very extensive HL7 standard. Files of messages constructed from the guidelines in this document will fall within the HL7 standard, but there is a wide variety of other possible HL7 messages that are outside the scope of this document.

References, Copyrights, and Trademarks

- See the Health Level 7 standards for HL7 version 2.5.1 at www.hl7.org for additional information. HL7 and Health Level Seven are registered trademarks of Health Level Seven, Inc. Reg. U.S. Pat & TM Off.
- The Public Health Information Network (PHIN) within the Centers for Disease Control and Prevention (CDC) (www.cdc.gov/phin) has published an Implementation Guide for Syndromic Surveillance Data with the purpose of keeping the use of HL7 for syndromic surveillance data as uniform as possible. This document uses the PHIN document as a reference.
- The Public Health Information Network (PHIN) with the Centers for Disease Control and Prevention has published a vocabulary access and distribution system at http://phinvads.cdc.gov.
- This material contains content from LOINC® (http://loinc.org). The LOINC table, LOINC codes, and LOINC panels and forms file are copyright (c) 1995-2011, Regenstrief Institute, Inc. and the Logical Observation Identifiers Names and Codes (LOINC) Committee, and are available at no cost under the license at: http://loinc.org/terms-of-use.
- This material includes SNOMED Clinical Terms® (SNOMED CT®) which is used by permission of the International Health Terminology Standards Development Organization (IHTSDO). All rights reserved. SNOMED CT was originally created by The College of American Pathologists. "SNOMED®" and "SNOMED CT®" are registered trademarks of the IHTSDO.

Health Level Seven (HL7) Standards

The ANSI HL7 standard is widely used for data exchange in the health care industry. The full standard is quite lengthy, covering a wide variety of situations in both patient care and health care finance, and no single application is likely to use all of its available content. This document covers the subset of HL7 that will be used for syndromic surveillance records exchanged between SSEDON and external systems.

Basic HL7 Terms

Term	Definition
Message	A message is the entire unit of data transferred between systems in a single transmission. It is a series of segments in a defined sequence, with a message type and a trigger event.
Segment	A segment is a logical grouping of data fields. Segments within a defined message may be required or optional and may occur only once or may be allowed to repeat. Each segment is named and is identified by a segment ID, a unique 3-character code.
Field/Element	A field is a string of characters. Each field has an element name and is identified by the segment it is in and its sequence within the segment. Usage and cardinality requirements are defined in the Segment Definitions.
Component	A component is one of a logical grouping of items that comprise the contents of a coded or composite field. Within a field having several components, not all components are necessarily required to be populated.
Data Type	A data type restricts the contents and format of the data field. Data types are given a 2 or 3 letter code. Some data types are coded or composite types with several components. The applicable HL7 data type is listed in each field definition. See the section, Data Types.
Delimiters	The delimiter values are given in MSH-1 and MSH-2 and are used throughout the message. The delimiters supported by SSEDON are: • Field Separator: | • Component Separator: ^ • Sub-Component Separator: & • Repetition Separator: ~ • Escape Character: \

Basic HL7 Message Structure

There are four different types of Admit-Discharge-Transfer (ADT) messages used for syndromic surveillance messages.

Type	Description
ADT_A01	Admit/Visit
ADT_A03	Discharge/End Visit
ADT_A04	Emergency Department Registration
ADT_A08	Patient Update

HL7 Message Structure Attributes

The following table describes the columns used in the Message Segments section to define the individual segments.

Attribute	Definition
Sequence	Sequence of the elements as they are numbered in the HL7 Segment
Segment	Name of the HL7 segment (MSH, EVN, etc.)
Length	Maximum length of an element/segment

Usage	Describes the use of the elements within the segment by SSEDON. Values used in this implementation are:
	• R – Required.
	  ○ Element must be sent with sub-elements populated according to the definition.
	• RE – Required, but may be empty.
	  ○ If the sender captures the data, the data must be sent in the specified segment.
	• C (R/E) – Conditional
	  ○ When conditionality predicate evaluates to "True', the segment usage is in effect. If CR, the usage is R when the condition is true. If CE, the usage is RE if the condition is met.
	• X – Not Supported.
	  ○ This indicates that the field is not supported.

Cardinality	Defines the minimum and maximum number of times the element may appear in this segment. • [0..1] Element may be omitted and can have, at most, one occurrence. • [1..1] Element must have exactly one occurrence. • [0..*] Element may be omitted or repeat an unlimited number of times.

Each of the ADT HL7 messages are composed of the following segments:

Segment	A01 R/O	A04 R/O	A08 R/O	A03 R/O	Description
MSH	R	R	R	R	Message header
EVN	R	R	R	R	Event Type
PID	R	R	R	R	Patient Identification
PV1	R	R	R	R	Patient Visit Information
PV2	RE	RE	RE	RE	Additional patient visit information
OBX	R	R	R	R	Observation/Result
DG1	RE	RE	RE	RE	Diagnosis
PR1	RE	RE	RE	RE	Procedures
IN1	RE	RE	RE	RE	Insurance (limited support)

Segment order within the HL7 message

There is a difference in segment order between segments A01/A04/A08 and segment A03 that involves the OBX, AL1 and DG1 segments.

A01, A04, & A08

Sequence	Segment	Usage	Cardinality
1	MSH	R	[1..1]
2	EVN	R	[1..1]
3	PID	R	[1..1]
4	PV1	R	[1..1]
5	PV2	RE	[0..1]
6	OBX	RE	[0..*]
7	AL1*	O	[0..*]
8	DG1	RE	[0..*]
9	PR1	RE	[0..*]
10	GT1	O	[0..1]
11	IN1	RE	[0..*]

A03

Sequence	Segment	Usage	Cardinality
1	MSH	R	[1..1]
2	EVN	R	[1..1]
3	PID	R	[1..1]
4	PV1	R	[1..1]
5	PV2	RE	[0..1]
6	AL1*	O	[0..*]
7	DG1	RE	[0..*]
8	PR1	RE	[0..*]
9	OBX	RE	[0..*]
10	GT1	O	[0..1]
11	IN1	RE	[0..*]

* The AL1 (Allergy Information) and GT1 (Guarantor information) segments are included here to show where the AL1 and GT1 segments should appear in the message segment order if sent by the healthcare facility. The AL1 or the GT1 segments are not part of the segment set currently used for syndromic surveillance by NDHHS Division of Public Health and neither segment is required (R) or required but can be sent empty (RE).

Here is a simple message example.

```
MSH|^~\&||NEFACIL^9876543210^NPI||SSEDON|201102091114||ADT^A04^ADT_A01|201102091114-0078|P|2.5.1
EVN||201102091114||||NEFACIL^9876543210^NPI
PID|1||20060012168^^^^MR||~^^^^^^S||19570923|F||2054-5^Black or African American^CDCREC|^Whoville^NE^^65101^USA^^31222|||||||||| 2186-5^Not Hispanic or Latino^CDCREC|||||||N
PV1||E||E|||||||||1|||||20110209_0064|||||||||||||||||||||||20110217144208
PV2|||||||||||||||||||||||||||||||||||||F^Foot^HL70430
OBX|1|NM|11289-6^BODY TEMPERATURE^LN ||101|[degF]^F^UCUM||||F|||20110114130658
OBX|2|TX|8661-1^Chief Complaint^LN||Lower back pain||||||F|||201101141416037
DG1|1||8472^SPRAIN LUMBAR REGION^I9|||F
```

Additional explanation of how HL7 messages are created will be provided later in this document. The previous example shows a basic ADT_A04 (registration) message. In this example, a message is being generated by NECARE to be sent to SSEDON. This message consists of six segments.

- The Message Header segment (MSH) identifies the sender (NEFACIL) of the information and the receiver (SSEDON). It also identifies the message as being of type ADT. The ADT message type is an Admit-Discharge-Transfer, as defined by HL7.
- The Event Type segment (EVN) communicates the date and time the event occurred and identifies the owner of the information. This is used to designate a parent-child relationship. The parent (sending) facility would be identified in the MSH segment and the child (data owner and event) facility would be identified in the EVN segment.
- The Patient Identification segment (PID) provides patient identification information as allowed by HIPPA and demographic information. For security reasons personal identifiers outside of the treating facility setting are not to be used. Patient name, social security number, or any other information specifically identifying any unique person outside of the health care facility setting is not to be used here. Even though the patient name element appears in the segment definition because of HL7 requirements, no patient name or alias is to be sent.
- The Patient Visit segment (PV1) provides information unique to the patient visit to the care facility such as visit identifier and date and time of admission.
- The Patient Visit Additional Information segment (PV2) provides information concerning how the patient arrived at the healthcare facility.
- The Observation segment (OBX) is primarily used to carry chief complaint information and key clinical observation/result information within a patient's message.
- The Diagnosis segment (DG1) contains admit, working, and final diagnosis information.

The HL7 format is flexible enough to be used for both real-time interaction and large batches. The HL7 standard defines file header and file trailer segments that are used when a number of messages are gathered into a batch for transmission as a single file. SSEDON will use batch files of messages to communicate with external systems.

National Standards vs. Nebraska SSEDON Standards

The national guidance for syndromic surveillance data reporting at the time this document's writing is the "PHIN Messaging Guide for Syndromic Surveillance: Emergency Department, Urgent Care, Inpatient and Ambulatory Care Settings" Release 2.0; September 16, 2014. It can be found at http://www.cdc.gov/phin/resources/PHINguides.html and this is a direct link to the pdf.

NDHHS differs from the national guidelines for these HL7 segment data elements and these specifications must be met to send data to SSEDON.

Segment/Element/Data Type - Description	National	NDHHS
MSH-4.1 – Sending facility namespace ID	RE	R
MSH-6 – Receiving Facility	O	R
MSH-21 – Message Profile Identifier	R	O
EVN-7.1 – Event Facility namespace ID	RE	R
PID-5 – Patient Name	R	X
PID-7 – Patient Date of Birth	O	R
PID-8 – Administrative Sex (Gender)	RE	R
PID-10 – Race	RE	R
PID-10.2 – Race code descriptive text	O	R
PID-11 – Address (specific elements)	RE	R
PID-11.3 – City (XAD-3)	RE	R
PID-11.4 – State/Province (XAD-4)	RE	R
PID-11.5 – Zip/Postal Code (XAD-5)	RE	R
PID-11.9 – County/Parish Code (XAD-9)	RE	R
PID-11.10 – Census Tract (XAD-10)	X	RE
PID-22 – Ethnic Group	RE	R
PID-22.2 – Ethnic Group code descriptive text	O	R
PID-29 – Patient Death Date/Time	CE	CR[1]
PID-30 – Patient Death Indicator	CE	CR[2]
PV1-4 – Admission Type	O	R
PV1-47 – Total Charges	X	RE
PV2-38 – Mode of Arrival	X	RE
PV2-38.2 – Mode of arrival code descriptive text	X	CR[3]
DG1-3 – Diagnosis Code		
DG1-3.2 – Diagnosis code descriptive text	O	CR[3]
OBX-3 - Observation Code		
OBX-3.2 – Observation code descriptive text	O	CR[3]
PR1-3 – Procedure Code		
PR1-3.2 – Procedure code descriptive text	O	R
HD-1 – Namespace ID (within the HD data type)	RE	R
CX-4 – Assigning Authority (within the CX data type)	R	RE
FHS-4 – File Sending Facility Name	O	R
FHS-9 – File Name	O	R
FHS-11 – File Control ID	O	R

1. If the patient death indicator is 'Y' then the patient death date/time must be populated
2. If the discharge disposition indicates the patient expired or died then the patient death indicator must be populated with 'Y'.

3 If a code is provided then the associated descriptive text is required.

Sending HL7 Batches

Example:

```
FHS|^~\&
BHS|^~\&|ER1|NEBRASKA_HLTH_CTR^9876543210^NPI||SSEDON|20110123123558
MSH|^~\&|ER1|NEBRASKA_HLTH CTR^9876543210^NPI||SSEDON|20110123003938||ADT^A01^ADT_A01|ER1-20110123-001|P|2.5.1
…(Continue 240 messages)…
BTS|240|NE HEATH CENTER reporting 1-23-2011: 0000 – 1200 hrs
FTS|1
```

FHS – File Header Segment

This segment is used as the lead-in to a file for sending batches of files.

FHS: File Header Segment Definition						
#	Element Name	Usage	DT	Len	Cardinality	Default Value/Information
1	File Field Separator	R	ST	1	[1..1]	Same as MSH segment value.
2	File Encoding Characters	R	ST	4	[1..1]	Same as MSH segment value.
4	File Sending Facility Name	R*	HD	227	[1..1]	Same as MSH segment value.
6	File Receiving Facility	R	HD	227	[1..1]	Same as MSH segment value.
7	File Creation Date/Time	R	TS	26	[1..1]	Same as MSH segment value.
9	File Name	R*	ST	20	[0..1]	Same as MSH segment value.
11	File Control ID	R*	ST	199	[0..1]	Used to uniquely identify a file among all files sent from the sending facility identified in FHS-4.
12	Reference File Control ID	O	ST	20	[0..1]	Contains the value of FHS-11 when this file was originally transmitted. Not present if file is being transmitted initially.

*Nebraska differs from the national standards. See National Standards vs. Nebraska SSEDON Standards.

FTS – File Trailer Segment

The FTS segment defines the end of a file. There should only be one file within a batch.

FTS: File Trailer Segment Definition						
#	Element Name	Usage	DT	Len	Cardinality	Default Value/Information
1	File Batch Count	R	NM	10	[1..1]	Value should always be 1.
2	Batch Comment	O	ST	80	[0..1]	

BHS – Batch Header Segment

This segment is used as the start of a group of messages that comprise a batch.

BHS: Batch Header Segment Definition						
#	Element Name	Usage	DT	Len	Cardinality	Default Value/Information
1	Batch Field Separator	R	ST	1	[1..1]	Same as MSH segment value. |
2	Batch Encoding Characters	R	ST	4	[1..1]	Same as MSH segment value. ^~\&
3	Batch Sending Application	R	HD	227	[1..1]	Same as MSH segment value.
4	Batch Sending Facility	R	HD	227	[1..1]	Same as MSH segment value.
6	Batch Receiving Facility	R	HD	227	[1..1]	Same as MSH segment value.
7	Batch Creation Date/Time	R	TS	26	[1..1]	Same as MSH segment value.

BTS – Batch Trailer Segment

This segment defines the end of a batch of messages.

BTS: Batch Trailer Segment Definition						
#	Element Name	Usage	DT	Len	Cardinality	Default Value/Information
1	Batch Message Count	R	NM	10	[1..1]	Number of messages in the batch.
2	Batch Comment	O	ST	80	[0..1]	

Message Timing

Encounter data should be submitted a minimum of once per day as a batch message file containing the previous day's ER/UC encounters and updates. Encounter data may also be submitted in real time. "Real-time" processing refers to the ability to transmit an HL7 2.5.1 formatted ADT^A01(Patient Admission), ADT^A03(Patient Discharge), ADT^A04 (Emergency Department Registration), ADT^A08 (Patient Information Update) messages as the events occur.

Secure Message Transmission

All messages submitted to SSEDON must be sent in a secure, electronic method. Secure email will be used in the HL7 message testing phase. Once message testing is complete a secure communication ebXML interface shall be used for sending/receiving syndromic surveillance data. The CDC provides, free of charge, PHINMS. The provider organization will submit a text file containing HL7 2.5 formatted ADT^A01, ADT^A03, ADT^A04 and ADT^A08 messages to be delivered via PHINMS to NDHHS. It is the responsibility of the provider organization to obtain, install, and configure PHINMS. The provider organization will need to obtain from SSEDON a CPA (Collaboration Protocol Agreement) for access to the SSEDON Real-time system.

Full documentation and contact information for the PHINMS product may be found at the following link:

http://www.cdc.gov/phin/

Message Segments

For each section, only the elements listed in this guide are supported by SSEDON. However, all messages must adhere to the proper formatting. For example, MSH-5 is not supported, but the MSH segment must still exist as a placeholder for the MSH-5 segment. It will be blank.

- `MSH|^~\&#||Facility^123456789^NPI||SSEDON`

MSH – Message Header

This is the message header. Every MSH segment is comprised of these fields:

MSH: Header Segment Definition						
#	**Element Name**	**Usage**	**DT**	**Len**	**Cardinality**	**Default Value/Information**
1	Character Separator	R	ST	1	[1..1]	|
2	Encoding Characters	R	ST	4	[1..1]	^~\&#
4	Sending facility	R*	HD	227	[1..1]	Facility^2.16.840.1.113883.19.3.1.1^ISO
6	Receiving facility	R*	HD	227	[0..1]	SSEDON
7	Date/Time of the message	R	TS	26	[1..1]	See example.
9	Message Type	R	MSG	15	[1..1]	See example.
10	Message Control ID	R	ST	20	[1..1]	See example.
11	Processing ID	R	PT	3	[1..1]	P^T
12	Version ID	R	VID	5	[1..1]	2.5.1
21	Message Profile Identifier	O*	EI	427	[0..1]	Nebraska ignores.

*Nebraska differs from the national standards. See National Standards vs. Nebraska SSEDON Standards.

MSH-7: Date/Time of the message

The date/time of the message should be sent with minimum precision of minutes. Seconds are desired. Should follow the format: YYYYMMDDHHMM[SS[.S[S[S[S]]]]] [+/-ZZZZ]

- `|20141016135400-0500|`

MSH-9: Message Type

Acceptable values are:

- Admission Message: `|ADT^A01^ADT_A01|`
- Registration Message: `|ADT^A04^ADT_A01|`
- Update Message: `|ADT^A08^ADT_A01|`
- Discharge Message: `|ADT^A03^ADT_A03|`

See

MSG – Message Type under Data Types.

MSH-10: Message Control ID

Unique id for the message for the sending facility.

- `|1234567984564645ASDF|`

EVN – Event

This is the event segment.

EVN: Event Type Segment Definition						
#	**Element Name**	**Usage**	**DT**	**Len**	**Cardinality**	**Default Value/Information**
2	Recorded Date/Time	R	TS	26	[1..1]	See example.
7	Event Facility	R	HD	241	[1..1]	See example.

EVN-7 must contain the name of the facility that the patient visited. It shall be the individual facility and not a generic name (i.e., don't give all locations the same name).

- `EVN||20140214124578|||||ACME Hospital^54646464654^NPI`

EVN-2: Recorded Date/Time

This is the date/time of the patient's visit and should be precise to the minute. If additional precision is sent, it should follow this format: YYYYMMDDHHMM[SS[.S[S[S[S]]]]] [+/-ZZZZ]

- `|201503071335|` or `|20150307133550-0500|`

EVN-7: Event Facility

This field should contain the name of the facility so that NDHHS can identify where the patient was seen. It should be descriptive enough to discern the facility. Generic values such as "lab" or "emergency room" are not descriptive enough. It should follow the format shown in the table:

PID	Element Name	R/O	Data Type	Information/Example
7	Event Facility	-----	HD	----------
7.1	Namespace ID	R*	IS	Name of the facility
7.2	Universal ID	R	ST	Facility NPI #
7.3	Universal ID Type	R	ID	NPI

*Nebraska differs from the national standards. See National Standards vs. Nebraska SSEDON Standards.

- `|ACME Hospital^9182736450^NPI|`

PID – Patient Identification

This is the patient identification segment.

PID: Patient Identification Segment Definition						
#	**Element Name**	**Usage**	**DT**	**Len**	**Cardinality**	**Default Value/Information**
1	Set ID – PID	R	SI	4	[0..1]	1
3	Patient Identifier List	R	CX	478	[1..*]	See example.
5	Patient Name	X*	XPN	294	[1..*]	Nebraska – DO NOT SEND
7	Date/Time of Birth	R*	TS	26	[0..1]	See example.
8	Administrative Sex (Gender)	R*	IS	1	[0..1]	See example.
10	Race	R*	CWE	478	[0..*]	See example.
11	Patient Address	R*	XAD	513	[0..1]	See example.
22	Ethnic Group	R*	CWE	478	[0..1]	See example.
29	Patient Death Date/Time	CR*	TS	26	[0..1]	See example.
30	Patient Death Indicator	CR*	ID	1	[0..1]	See example.

*Nebraska differs from the national standards. See National Standards vs. Nebraska SSEDON Standards.

- `PID|1||2222^^^GreaterNorthMedCtr&4356012945&NPI^MR||~^^^^^^S|||F||2106-3^White^CDCREC|^^Decatur^13^30303^USA^M^^13121|||||||100221223^^GreaterNorthMedCtr&4356012945&NPI^AN||||2135-2^Hispanic or Latino^CDCREC|||||||20140826202100|Y|||||`

PID-3: Patient Identifier List

This is a **unique** alphanumeric identifier that identifies the patient relative to the facility. The element is the CX data type, and CX-1 will be the patient's number, CX-4 will be the "assigning authority" of the number (e.g., the hospital sent in the HD data type), and the CX-5 code will be MR for "medical record number" or PI for "patient identifier."

- `|12345A^^^Acme Hospital&99990809&CLIA^MR|`

PID-7: Date/Time of Birth

The patient's date/time of birth should be precise to the day. If time is sent, it should follow this format: YYYYMMDDHHMM[SS[.S[S[S[S]]]]] [+/-ZZZZ]

- `|19580927|` or `|198305272100|`

PID-8: Administrative Sex (Gender)

Concept Code	Description	Resulting PID-8 Value
F	Female	|F|
M	Male	|M|
O	Other	|O|
U	Unknown	|U|
http://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.114222.4.11.3403		

PID-10: Race

Concept Code	Description	Resulting PID-10 Value
1002-5	American Indian or Alaska Native	|1002-5^American Indian or Alaska Native^CDCREC|
2028-9	Asian	|2028-9^Asian ^CDCREC|
2054-5	Black or African American	|2054-5^Black or African American^CDCREC|
2076-8	Native Hawaiian or Other Pacific Islander	|2076-8^Native Hawaiian or Other Pacific Islander^CDCREC|
2131-1	Other Race	|2131-1^Other Race^CDCREC|
2106-3	White	|2106-3^White^CDCREC|
http://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.114222.4.11.836		

PID-11: Patient Address

The patient address field is comprised of fields shown in the following table. Some of the fields are required in Nebraska.

PID #	Field	R/O	Data Type	Default value/Information
11	Patient Address	---	XAD	----------
11.1	Street Address	X	SAD	DO NOT SEND
11.2	Other Designation	O	ST	----------
11.3	City	R*	ST	e.g., Lincoln
11.4	State/Province	R*	ST	FIPS code or two letter USPS abbreviation; see link below.
11.5	ZIP or Postal Code	R*	ST	e.g., 68512
11.6	Country	RE*	ID	e.g., USA (for full list of coded values, see link below)
11.7	Address Type	O	ID	e.g., L (for full list of values, see link below)
11.8	Other Geographic Designation	O	ST	----------
11.9	County/Parish Code	R*	IS	e.g., 31109 (e.g., 31109 is Lancaster County, Nebraska) ; see link below.
11.10	Census Tract	RE*	IS	Guidance coming soon.
State/Province (11.4) - http://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.114222.4.11.830 Country (11.6) - http://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.114222.4.11.828 Address Type (11.7)- http://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.114222.4.11.801 County/Parish Code (11.9)- http://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.114222.4.11.829				

*Nebraska differs from the national standards. See National Standards vs. Nebraska SSEDON Standards.

- `|^^Lincoln^31^68509^USA^L^^31109^|`

PID-22: Ethnic Group

Concept Code	Description	Resulting PID-22 Value
2135-2	Hispanic or Latino	|2135-2^Hispanic or Latino^CDCREC|
2186-5	Not Hispanic or Latino	|2028-9^Not Hispanic or Latino^CDCREC|
UNK	Unknown	|UNK^Unknown^NULLFL|
http://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.114222.4.11.837		

PID-29: Patient Death Date and Time

If it is indicated that a patient is deceased per the Patient Death Indicator field, PID-30, the patient's death date and time should be sent with time precision to the minute in the format YYYYMMDDHHMM. If additional precision is sent, it should follow this format: YYYYMMDDHHMM[SS[.S[S[S[S]]]]] [+/-ZZZZ]

- |201503081425|

PID-30: Patient Death Indicator

Concept Code	Description	Resulting PID-30 Value
Y	Yes, the patient is deceased.	|Y|
N	No, the patient is not deceased.	|N|

PV1 – Patient Visit 1

This segment is for information about the patient's visit.

PV1: Patient Visit Segment Definition

#	Element Name	Usage	DT	Len	Cardinality	Default Value/Information
1	Set ID – PV1	RE	SI	4	[0..1]	1
2	Patient Class	R	IS	1	[1..1]	See example.
4	Admission Type	R*	IS	2	[0..1]	See example.
14	Admit Source	O	IS	6	[0..1]	See example.
19	Visit Number	R	CX	478	[1..1]	See example.
36	Discharge Disposition	R – A03, RE – A08	IS	3		See example.
44	Admit Date/Time	R	TS	26	[1..1]	See example.
45	Discharge Date/Time	R – A03, RE – A08	TS	26		See example.
47	Total Charges	RE*	NM	12	[0..1]	See example.

*Nebraska differs from the national standards. See National Standards vs. Nebraska SSEDON Standards.

Here are clarifications and examples for each PV1 data element.

PV1-2: Patient Class

Concept Code	Description	Resulting PV1-2 Value
E	Emergency	|E|
I	Inpatient	|I|
B	Obstetrics	|B|
O	Outpatient	|O|
P	Preadmit	|P|
R	Recurring patient	|R|
http://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.114222.4.11.3404		

PV1-4: Admission Type

Concept Code	Description	Resulting PV1-4 Value
A	Accident	|A|
C	Elective	|C|
E	Emergency	|E|
L	Labor and Delivery	|L|
N	Newborn (Birth in healthcare facility)	|N|
R	Routine	|R|
U	Urgent	|U|
https://phinvads.cdc.gov/vads/ViewValueSet.action?id=08D34BBC-617F-DD11-B38D-00188B398520		

PV1-14: Admit Source

Concept Code	Description	Resulting PV1-14 Value
1	Physician referral	|1|
2	Clinic referral	|2|
3	HMO referral	|3|
4	Transfer from a hospital	|4|
5	Transfer from a skilled nursing facility	|5|
6	Transfer from another health care facility	|6|
7	Emergency room	|7|
8	Court/law enforcement	|8|
9	Information not available	|9|
https://phinvads.cdc.gov/vads/ViewCodeSystem.action?id=2.16.840.1.113883.12.23		

PV1-19: Visit Number

This is a unique alphanumeric identifier that identifies the patient's visit to the facility. The element is the CX data type, and the CX-5 code will be VN for visit number.

- `|12345A^^^^VN|`

PV1-36: Discharge Disposition

There are 23 permissible codes for discharge disposition (some of the values in the national value set are discontinued or reserved for future use). The following table is a partial list.

Concept Code	Description	Resulting PV1-36 Value
01	Discharged to home or self-care (routine discharge)	|01|
02	Discharged/transferred to a short-term general hospital for inpatient care	|02|
40	Expired at home	|40|
50	Hospice – home	|50|
Visit the link below for a full list of permissible values. http://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.114222.4.11.915		

PV1-44: Admit Date/Time

The patient's admission date and time should include precision to the minute in the format YYYYMMDDHHMM. If additional precision is sent, it should follow this format: YYYYMMDDHHMM[SS[.S[S[S[S]]]]] [+/-ZZZZ]

- `|201503081425|`

PV1-45: Discharge Date/Time

The patient's discharge date and time should include precision to the minute in the format YYYYMMDDHHMM. If additional precision is sent, it should follow this format: YYYYMMDDHHMM[SS[.S[S[S[S]]]]] [+/-ZZZZ]

- `|201503100835|`

PV1-47: Total Charges

This is the patient's total charges incurred during the visit.

- `|1251.20|`

PV2 – Patient Visit 2

This segment contains additional patient visit information.

PV2: Patient Visit Additional Information Segment Definition						
#	Element Name	Usage	DT	Len	Cardinality	Default Value/Information
3	Admit Reason	RE	CE	478	[0..1]	See example.
38	Mode of Arrival Code	RE*	CE	478	[0..1]	See example.

*Nebraska differs from the national standards. See National Standards vs. Nebraska SSEDON Standards.

PV2-3: Admit Reason

This is the reason the provider admitted the patient and is different from chief compliant (the patient's reason for the visit). The field should be limited to the provider's reason for admitting the patient only. Free text is desirable. If only a coded value (e.g., ICD-9 or ICD-10) is available, send it. If pre-defined text values (e.g., from a drop down list) are available, the items should be concatenated and sent. If both free text and pre-defined drop down list items are available, concatenate the pre-defined values, append it to the free text and send both together. If the option is free text/pre-defined items vs. coded, send free text/pre-defined. Element is RE.

Coded Value (ICD-9)

- `PV2|||94821^Burn [any degree] involving 20-29 percent of body surface with third degree burn, 10-19%^I9CDX|`

Free Text

- `PV2|||^Third degree burns over head, neck, and both arms|`

Pre-Defined Text

- `PV2|||^Burns over 25% of body surface|`

Free Text & Pre-Defined Text (combined)

- `PV2|||^Third degree burns over head, neck, and both arms; Burns over 25% of body surface|`

PV2-38: Mode of Arrival Code

Concept Code	Description	Code System	Resulting PV2-38 Value
A	Ambulance	0430	|A^Ambulance^0430|
C	Car	0430	|C^Car^0430|
F	On foot	0430	|F^On foot^0430|
H	Helicopter	0430	|H^Helicopter^0430|
O	Other	0430	|O^Other^0430|
P	Public Transport	0430	|P^Public Transport^0430|
U	Unknown	0430	|U^Unknown^0430|

OBX - Observations

This is a segment for sending observations. The format doesn't change across different OBX segments, but the data sent in each OBX segment does vary. See the section Observation (OBX) Examples.

OBX: Observation Result Segment Definition						
#	Element Name	Usage	DT	Len	Cardinality	Default Value/Information
1	Set ID	R	SI	4	[1..1]	1
2	Value Type to identify OBX-5	R	ID	3	[1..1]	See example.
3	Observation Identifier	R	CWE	478	[1..1]	
5	Observation Value	RE	Varies	99999	[0..*]	
6	Units	CE	CE	62	[0..1]	See example.
11	Observation Result Status	R	ID	1	[1..1]	Store all but use "F" (see list)
14	Date/Time of the Observation	O	TS	26	[0..1]	

OBX-2: Value Type

Concept Code	Description	Resulting OBX-2 Value
CE	Coded Element	|CE|
CWE	Coded With Exception	|CWE|
NM	Numeric	|NM|
TS	Timestamp	|TS|
TX	Text	|TX|
XAD	Extended Address	|XAD|

OBX-6: Units

When OBX-5 contains numeric data, OBX-6 should contain the appropriate unit of measure for OBX-5. The following units of measure are acceptable.

Age

Concept Code	Preferred Concept Name	Code System	Resulting OBX-6 Value
d	day	UCUM	d^day^UCUM
mo	month	UCUM	mo^month^UCUM
UNK	unknown	NullFlavor	UNK^unknown^NullFlavor
wk	week	UCUM	wk^week^UCUM
a	year	UCUM	a^year^UCUM
https://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.114222.4.11.3402			

Height

Concept Code	Preferred Concept Name	Code System	Resulting OBX-6 Value
cm	CentiMeter [SI Length Units]	UCUM	cm^CentiMeter [SI Length Units]^UCUM
[ft_us]	foot [length]	UCUM	[ft_us]^foot [length]^UCUM
[in_us]	inch [length]	UCUM	[in_us]^inch [length]^UCUM
m	meter [length]	UCUM	m^meter [length]^UCUM
http://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.114222.4.11.891			

Pulse Oximetry

Concept Code	Preferred Concept Name	Code System	Resulting OBX-6 Value
%	percent	UCUM	%^percent^UCUM
https://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.114222.4.11.3590			

Temperature

Concept Code	Preferred Concept Name	Code System	Resulting OBX-6 Value
Cel	degree Celsius	UCUM	Cel^degree Celsius^UCUM
[degF]	degree Fahrenheit	UCUM	[degF]^degree Fahrenheit^UCUM
https://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.114222.4.11.919			

Other Units of Measure

Concept Code	Preferred Concept Name	Code System	Resulting OBX-6 Value
g/dL	Grams Per DeciLiter [Mass Concentration Units]	UCUM	|g/dL^Grams Per DeciLiter [Mass Concentration Units]^UCUM|
uL	MicroLiter [SI Volume Units]	UCUM	|uL^MicroLiter [SI Volume Units]^UCUM|
mm[Hg]	MilliMeters of Mercury [Blood Pressure Unit]	UCUM	|mm[Hg]^MilliMeters of Mercury [Blood Pressure Unit]^UCUM|
http://phinvads.cdc.gov http://phinvads.cdc.gov/vads/ViewValueSet.action?id=12D34BBC-617F-DD11-B38D-00188B398520 (mm[Hg])			

- `OBX|2|NM|8302-2^BODY HEIGHT^LN||64|[in_us]^inch [length]^UCUM|||||F|||20150122`
- `OBX|2|NM|8302-2^BODY HEIGHT^LN||5.33|[ft_us]^foot [length]^UCUM|||||F|||20150122`

Weight/Mass

Concept Code	Preferred Concept Name	Code System	Resulting OBX-6 Value
g	gram	UCUM	g^gram^UCUM
kg	KiloGram [SI Mass Units]	UCUM	kg^KiloGram [SI Mass Units]^UCUM
[oz_av]	ounce [mass]	UCUM	[oz_av]^ounce [mass]^UCUM
[lb_av]	pound [mass]	UCUM	[lb_av]^pound [mass]^UCUM
http://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.114222.4.11.879			

DG1 - Diagnosis

This is the format of the DG1 segment. The format doesn't change across different DG1 segments, but the data sent in each DG1 segment does vary. The cause of death can be sent as a DG1 segment. See Cause of Death in the Diagnosis (DG1) Examples section for that guidance and additional examples.

DG1: Diagnosis Segment Definition

#	Element Name	Usage	DT	Len	Cardinality	Example
1	Set ID – DG1	R	SI	4	[1..1]	1, then 2, then 3, etc. (for each)
3	Diagnosis Code – DG1	R	CE	478	[1..1]	See Diagnosis (DG1) Examples
5	Diagnosis Date/Time	O	TS	26	[0..1]	
6	Diagnosis Type	R	IS	2	[1..1]	See example.

DG1 Examples

DG1-6: Diagnosis Type

There are three "types" of diagnoses that can be sent to SSEDON, and the type is identified in DG1-6. They are:

Concept Code	Description	Resulting DG1-6 Value
A	Admitting	|A|
F	Final	|F|
W	Working	|W|
http://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.114222.4.11.827		

The first DG1 segment in a message shall be the primary diagnosis. All subsequent DG1 segments will be additional or secondary diagnoses.

- `DG1|10||94214^Erythema [first degree] of back [any part] [942.14]^ICD9|||F`
- `DG1|10||E8502^Accidental poisoning by other opiates and related narcotics [E850.2]^ICD9|||F`
- `DG1|10||E8504^Accidental poisoning by aromatic analgesics, not elsewhere classified [E850.4]^ICD9|||F`

PR1 – Procedures

This is the segment used to send information about procedures done during the patient's visit.

PR1: Procedures Segment Definition						
#	Element Name	Usage	DT	Len	Cardinality	Default Value/Information
1	Set ID	R	SI	4	[1..1]	1, 2, 3, etc.
3	Procedure Code	R	CE	478	[1..1]	See example.
5	Procedure Date/Time	R	TS	26	[1..1]	See example.

PR1 Examples

PR1-3: Procedure Code

The procedure code is a unique identifier assigned to the procedure. The PR1-3 segments is comprised of three parts:

#	Description
1	Identifier
2	Text
3	Name of Coding System

Permissible values for the Procedure Code come from three different coding systems: CPT-4, ICD-9CM, and ICD-10-PCS. SSEDON has no preference to which system's codes are used, but the formatting must meet SSEDON's standards in that the code specified in PR1-3.1 is from the system identified in PR1-3.3.

Code System	Example PR1-3 Value
CPT-4	|97012^Mechanical traction^C4|
ICD-9CM	|93.44^Other skeletal traction^I9CP|
ICD-10-PCS	|2W00X0Z ^Change Traction Apparatus on Head ^I10P|

For a list of procedures accepted by SSEDON, see the section Procedure (PR1) Examples.

PR1-5: Admit Date/Time

The procedure's date and time should include precision to the minute in the format YYYYMMDDHHMM. If additional precision is sent, it should follow this format: YYYYMMDDHHMM[SS[.S[S[S[S]]]]] [+/-ZZZZ]

- |201503081425|

IN1 – Insurance

This is the segment used to send insurance information. NDHHS is only asking for the insurance plan type.

IN1: Insurance Segment Definition						
#	Element Name	Usage	DT	Len	Cardinality	Default Value/Information
1	Set ID – IN1	R	SI	4	[1..1]	1
15	Plan Type	RE*	IS	3	[0..1]	See example.

IN1-15: Plan Type

For plan type, referred to as "Type of primary payer" in the elements list, there are 145 permissible codes for plan type. The following table is a partial list.

Concept Code	Description	Resulting IN1-15 Value
96	Auto Insurance (no fault)	|96|
821	Charity	|821|
511	Commercial managed Care – HMO	|511|
32	Department of Veterans Affairs	|32|
Visit the link below for a full list of permissible values. http://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.114222.4.11.3591		

List of Data Elements

These elements are required per SSEDON specifications and Nebraska DHHS rules and regulations.
http://www.sos.ne.gov/rules-and-regs/regsearch/Rules/Health_and_Human_Services_System/Title-173/Chapter-09.pdf

Required Elements – (R)

The following elements will be required for all patient visits. If any element cannot be provided, documentation must be submitted to NDHHS explaining why the data element cannot be provided. Inpatient and outpatient elements will be identified in the near future. Some items in the "required" list are present because Meaningful Use requires facilities to capture this data. If a facility is not attesting to Meaningful Use, NDHHS recognizes that data may not be present and those items are marked with a status of (non-MU=RE) meaning that even if a facility is not attesting to Meaningful Use, the data is required if captured by the facility. Regardless of Meaningful Use, a facility will still be asked to provide documentation on why they cannot send the data.

Elements: Required						
				DATASET		
Element Name	**Description**	**Segment**	**Status**	**ED**	**IN**	**OUT**
All Diagnoses Codes	All diagnoses codes associated with encounter to include but not limited to diagnosis code, type, and date of diagnosis	DG1	R	Y	---	---
Blood Pressure (initial)	Initial blood pressure reading including date/time of observation	OBX	R (non-MU=RE)	Y	---	---
Cause of Death	Preliminary cause of death	DG1	CR	Y	---	---
Date of admission	Date and time when the patient was admitted to the emergency department	PV1-44	R	Y	---	---
Date of discharge	Date when the patient was discharged from this care facility	PV1-45	R	Y	---	---
Discharge disposition	Code indicating the place or setting to which the patient was discharged	PV1-36	R	Y	---	---
Ethnic Group	Code indicating ethnicity of patient	PID-22	R	Y	---	---
Height	Patient body height and associated unit of measure	OBX	R (non-MU=RE)	Y	---	---
Patient city/town of residence	Name city/town of residence	PID-11.3	R	Y	---	---
Patient Class	Patient classification within facility. Limit values to E:Emergency, I:Inpatient, O:Outpatient	PV1-2	R	Y	---	---
Patient county of residence	Code indicating county of residence	PID-11.9	R	Y	---	---
Patient Date of Birth	Patient date of birth	PID-7	R	Y	---	---
Patient encounter identifier	Unique identifier for this patient's encounter at the facility identified in Treating Facility Identifier	PV1-19	R	Y	---	---
Patient encounter reason (chief complaint)	Short description of the patient's self-reported chief complaint or reason for visit	OBX	R	Y	---	---
Patient Gender	Code indicating gender of patient	PID-8	R	Y	---	---
Patient Identifier	Uniquely identifies a patient and his/her medical record/information for the facility identified in Treating Facility Identifier	PID-3	R	Y	---	---
Patient Race	Code indicating race of patient	PID-10	R	Y	---	---
Patient state of residence	Code indicating state of home residence.	PID-11.4	R	Y	---	---
Patient zip code of residence	Zip Code portion of the patient's home address	PID-11.5	R	Y	---	---
Smoking Status	Smoking Status	OBX	R (non-MU=RE)	Y	---	---
Temperature (initial)	Patient body temperature and associated unit of measure – initial measurement at visit	OBX	R	Y	---	---
Treating Facility Identifier	Code identifying treating facility from which the patient encounter originated	EVN-7	R	Y	---	---
Treating Facility Type	Category of Facility or Encounter	OBX	R	Y	---	---
Type of patient encounter	Code identifying type of patient encounter	PV1-2	R	Y	---	---
Weight	Patient body weight and associated unit of measure	OBX	R (non-MU=RE)	Y	---	---

Required Elements if Data is Available - (RE)

The following data elements will be required if the facility has the data. If any element cannot be provided, documentation must be submitted to NDHHS explaining why the data element cannot be provided. Inpatient and outpatient elements will be identified in the near future.

Elements: Required if Data Available						
				DATASET		
Element Name	Description	Segment	Status	ED	IN	OUT
Admit Reason	Provider's reason for admitting the patient	PV2-3	RE	Y	---	---
Census tract	Census Tract information based on patient address of residence	PID-11.10	RE	Y	---	---
Date of Onset	Date of illness onset as reported by patient	OBX	RE	Y	---	---
ED Acuity Assessment	Assigned value for ED acuity on patient encounter	OBX	RE	Y	---	---
Education Level	Highest level of education attained by patient	OBX	RE	Y	---	---
Hospital Unit	Hospital Unit where patient is at the time the message is sent	OBX	RE	Y	---	---
Mode of Arrival	Indicates how the patient arrived at the health care facility	PV2-38	RE	Y	---	---
Orders	Were special orders given during the patient encounter (e.g. chest x-ray, ventilator, or precautions)	OBX	RE	Y	---	---
Patient country of residence	Code indicating country of residence	PID-11.6	RE	Y	---	---
Pregnancy Status	At the time of the encounter was the patient pregnant	OBX	RE	Y	---	---
Pulse Oximetry (initial)	Oxygenation percentage of the patient's hemoglobin – initial measurement at visit	OBX	RE	Y	---	---
Total charges	Total charges to patient from facility related to encounter	PV1-47	RE	Y	---	---
Transferred to/from ICU	During the encounter was the patient transferred to/from the ICU	OBX	RE	Y	---	---
Treating Facility Location/Address	Address of Treating Facility	OBX	RE	Y	---	---
Triage Note	Initial triage assessment of the patient	OBX	RE	Y	---	---
Type of primary payer	Code indicating primary source of payment	IN1-15	RE	Y	---	---
Active Medication List*	List of active medications at the time of admission (name only)	OBX	RE	TBD	---	---
Current Problem List*	List of current illnesses as reported by patient at the time of the patient encounter.	OBX	RE	TBD	---	---
Discharge Medications*	List of discharge medications (name only)	OBX	RE	TBD	---	---

*Future elements. Guidance will be added for these elements in the near future.

Optional Elements – (O)

The following elements are optional. If the data is available, NDHHS wants to receive them.

Elements: Optional						
				DATASET		
Element Name	Description	Segment	Status	ED	IN	OUT
Age	Patient's age (and unit of measure)	OBX	O	Y	---	---
Clinical Impression	Free text reasoning for the diagnosis; may be sometimes referred to as preliminary diagnosis.	OBX	O	Y	---	---
Heart rate (initial)	Patient's initial heart rate	OBX	O	Y	---	---
Respiratory rate (initial)	Patient's initial respiratory rate	OBX	O	Y	---	---
Employment Indicators*	Information related to the patient's job to include but not limited to employment status, employer, activity level, work hazards, etc.	OBX	O	TBD	---	---
Lab Orders*	Lab tests ordered for the patient	TBD	O	TBD	---	---
Lab Test Results*	Lab results for the patient to include test result, test date, and reference range	TBD	O	TBD	---	---
Occupation/Industry of patient*	Descriptive name of patient's occupation/industry	TBD	O	TBD	---	---

*Future elements. Guidance will be added for these elements in the near future.

Examples & Clarifications

Diagnosis (DG1) Examples

Cause of Death

To indicate death, PID-30 should be Y if the patient has died and N if they have not. PID-29 should be populated with the death date/time as well. The cause of death shall be reported in one of these three manners:

- The last DG1 segment shall be cause of death as reported with ICD9/ICD10/SNOMED codes.
  - `DG1|10||E8502^Accidental poisoning by other opiates and related narcotics [E850.2]^ICD9||201503221525|F`
- The cause of death can be reported (preferred) in an OBX segment using the following LOINC code: 69453-9
  - `OBX|1|CWE|69453-9^Cause of death (immediate)^LN||6600^somethingbad^ICD9|||||||||201503221525`
  - `OBX|2|CWE|69453-9^Cause of death (underlying)^LN||0020^Typhoid fever^ICD9|||||||||201503221525`
- Or send both DG1 and OBX
  - `DG1|1||123456^something bad^ICD10||201503221525|F`
  - `DG1|2||789011^something worse^ICD10||201503221525|F`
  - `OBX|1|CWE|69453-9^Cause of death (immediate)^LN||6600^somethingbad^ICD10|||||||||201503221525`
  - `OBX|2|CWE|69453-9^Cause of death (underlying)^LN||4500^somethingquiet^ICD10|||||||||201503221525`

Observation (OBX) Examples

The following are examples of the elements listed in the Required Data Elements section that are to be set via the OBX segment.

- LOINC codes referenced from https://search.loinc.org
- SNOMED codes reference from http://browser.ihtsdotools.org
- Also see the PHIN VADS website at http://phinvads.cdc.gov

Active Medication List

This data element is currently on hold. NDHHS will provide guidance for Active Medication List in the near future. It should not be sent at this time. When guidance is added to this Implementation Guide, the element will be RE, and will be required if available.

Discharge Medication List

This data element is currently on hold. NDHHS will provide guidance for Active Medication List in the near future. It should not be sent at this time. When guidance is added to this Implementation Guide, the element will be RE, and will be required if available.

Blood Pressure

This is the patient's initial blood pressure. It can be sent as systolic/diastolic in one observation or as separate systolic and diastolic readings. Only the first or initial blood pressure systolic/diastolic observation is desired.

- `OBX|20|TX|18684-1^Blood Pressure^LN||107/77|mm[Hg]^MilliMeters of Mercury [Blood Pressure Unit]^UCUM|||||F|||201503130830`
- `OBX|20|TX| 55284-4^Blood Pressure^LN||107/77|mm[Hg]^MilliMeters of Mercury [Blood Pressure Unit]^UCUM|||||F|||201503130830`

or

- `OBX|20|NM|8480-6^Systolic Blood Pressure^LN||120|mm[Hg]^MilliMeters of Mercury [Blood Pressure Unit]^UCUM|||||F|||201503130830`
- `OBX|20|NM| 11378-7^Systolic Blood Pressure at first encounter^LN||120|mm[Hg]^MilliMeters of Mercury [Blood Pressure Unit]^UCUM|||||F|||201503130830`
- `OBX|20|NM|8462-4^Diastolic Blood Pressure^LN||80|mm[Hg]^MilliMeters of Mercury [Blood Pressure Unit]^UCUM|||||F|||201503130830`
- `OBX|20|NM|11377-9^Diastolic Blood Pressure at first encounter^LN||80|mm[Hg]^MilliMeters of Mercury [Blood Pressure Unit]^UCUM|||||F|||201503130830`
  - https://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.113883.3.88.12.80.62

Clinical Impression

This is the free text reasoning for a diagnosis, and the LOINC code suggests it may be a preliminary diagnosis. Should be text from the individual(s) diagnosing the patient.

- `OBX|1|TX|44833-2^CLINICAL IMPRESSION/PRELIMINARY DIAGNOSIS^LN||Pain consist with appendicitis||||||F|||20110209111`

Condition Onset Date/Time

Illness or injury onset date and time. This is not a free text field. It shall contain a date/time.

- `OBX|25|TS|11368-8^ILLNESS OR INJURY ONSET DATE AND TIME^LN||20110215||||||F|||201102171658`

Education Level

This element is the patient's highest level of education reported.

- `OBX|1|CWE|11379-5^level of education^LN||8^Graduate degree^LL7-6||||||F|||20150311`

Concept Code	Preferred Concept Name	Code System	Resulting OBX-5 Value
1	No schooling	LL7-6	|1^No schooling^LL7-6|
2	8th grade/less	LL7-6	|2^8th grade/less^LL7-6|
3	9-11 grades	LL7-6	|3^9-11 grades^LL7-6|
4	High school	LL7-6	|4^High school^LL7-6|
5	Technical or trade school	LL7-6	|5^Technical or trade school^LL7-6|
6	Some college	LL7-6	|6^Some college^LL7-6|
7	Bachelor's degree	LL7-6	|7^Bachelor's degree^LL7-6|
8	Graduate degree	LL7-6	|8^Graduate degree^LL7-6|
http://r.details.loinc.org/AnswerList/LL7-6.html			

Heart Rate – Initial Reading

Heart Rate at first encounter

- `OBX|21|NM|11328-2^Heart Rate^LN||67|(beats)/min|||||F|||`

Height

This is the height of the patient. The LOINC in OBX-3 should be 8302-2. OBX-5 must be a numeric value. The unit of measure must also be specified in OBX-6 using the appropriate unit of measure values for height. See OBX-6: Units.

- `OBX|2|NM|8302-2^BODY HEIGHT^LN||64|[in_us]^inch [length]^UCUM|||||F|||20150122`
- `OBX|2|NM|8302-2^BODY HEIGHT^LN||5.33|[ft_us]^foot [length]^UCUM|||||F|||20150122`

Hospital Unit

This is the patient's location in the hospital at the time the message is sent (e.g., at time of admission or discharge). The LOINC for OBX-3 shall be 56816-2. The value of OBX-5 shall be from the following list and match the format in the example.

For OBX-5 use this list: https://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.113883.13.19

- `OBX|3|CWE|56816-2^PATIENT LOCATION^LN||1029-8^Medical/Surgical critical care unit^HSLOC||||||F|||20110217`

Initial ED Acuity

Assigned value for ED acuity at patient's visit.

Concept Code	Preferred Concept Name	Code System	Resulting OBX-5 Value
AC	Acute	HL70432	AC^Acute^HL70432
CH	Chronic	HL70432	CH^Chronic^HL70432
CO	Comatose	HL70432	CO^Comatose^HL70432
CR	Critical	HL70432	CR^Critical^HL70432
IM	Improved	HL70432	IM^Improved^HL70432
MO	Moribund	HL70432	MO^Moribund^HL70432
http://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.114222.4.11.912			

- `OBX|2|CWE|11283-9^INITIAL ACUITY^LN||CR^Critical^HL70432||||||F|||20150224`

Patient Age

This is the patient's age reported at time of visit. For patients less than 2 years old, patient age must be reported to the nearest month. For patients 2 years old and over, patient age must be reported in years. OBX-6 shall include the appropriate age units to define OBX-5. See OBX-6: Units.

- `OBX|3|NM|21612-7^AGE TIME PATIENT REPORTED^LN||20|a^YEAR^UCUM|||||F|||20141123200110`

or

- `OBX|3|NM|21612-7^AGE TIME PATIENT REPORTED^LN||14|mo^month^UCUM|||||F|||20141123200110`

Patient Chief Complaint

This is a free text field. Ideally, the chief complaint should be the patient's reason for visiting the medical facility in the patient's own words (a summary will be sufficient) sent as free text. If pre-configured items from a dropdown list are available, they should be concatenated and appended to the patient's free text complaint. The value should **not** be the facility's reason for admitting the patient and should only contain the patient's reason for the visit and nothing more. If, and only if, a free text chief complaint does not exist in the electronic health record (EHR) system will it be acceptable to only send concatenated pre-configured dropdown list items. Element is R.

It can be sent via either of these two methods, but the second option using TX is preferred.

- `OBX|1|CWE|8661-1^CHIEF COMPLAINT:FIND:PT:PATIENT:NOM:REPORTED^LN||^^^^^^^^STOMACH ACHE FOR TWO DAYS||||||F|||201502241419`

- `OBX|1|TX|8661-1^CHIEF COMPLAINT – REPORTED^LN||STOMACH ACHE FOR TWO DAYS||||||F|||201502241419`

Pregnancy Status

To report pregnancy status, the LOINC to be used in OBX-3 is 11449-6.

- `OBX|1|TX|11449-6^Pregnancy status^LN||Unknown||||||F|||20141123205531`

OBX-5 Values
Yes
No
Unknown

Pulse Oximetry – Initial Reading

This shall be the initial pulse oximetry reading, and should not be updated with subsequent readings during the visit. We want the first, and only the first reading available. OBX-6 should contain the appropriate unit of measure for pulse oximetry, in this case %. See OBX-6: Units.

- `OBX|4|NM|59408-5^OXYGEN SATURATION IN ARTERIAL BLOOD BY PULSE OXIMETRY^LN||91|%^PERCENT^UCUM||A|||F|||20110217145139`

Respiration Rate – Initial Reading

- OBX|8|NM|11291-2^Respiration Rate^LN||100|(breaths)/min|||||F|||20141123205531

Smoking Status

The value for OBX-5 (CWE data type) must be from this table.

Concept Code	Preferred Concept Name	Code System	Resulting OBX-5 Value
428071000124103	Current Heavy tobacco smoker	SCT	|428071000124103^Current Heavy tobacco smoker^SCT
428061000124105	Current Light tobacco smoker	SCT	|428061000124105^Current Light tobacco smoker^SCT
428041000124106	Current some day smoker	SCT	428041000124106^Current some day smoker^SCT
8517006	Former smoker	SCT	8517006^Former smoker^SCT
266919005	Never smoker	SCT	266919005^Never smoker^SCT
77176002	Smoker, current status unknown	SCT	77176002^Smoker, current status unknown^SCT
449868002	Current every day smoker	SCT	449868002^Current every day smoker^SCT
266927001	Unknown if ever smoked	SCT	266927001^Unknown if ever smoked^SCT
https://phinvads.cdc.gov/vads/ViewValueSet.action?id=E7943851-2633-E211-8ECF-001A4BE7FA90			

- OBX|19|CWE|72166-2^TOBACCO SMOKING STATUS^LN||266919005^never smoker^SCT||||||F|||20110217

Temperature – Initial Reading

This shall be the initial body temperature reading, and should not be updated with subsequent readings during the visit. We want the first, and only the first reading available. OBX-6 should contain the appropriate units of measure for temperature. See OBX-6: Units.

- OBX|6|NM|11289-6^BODY TEMPERATURE ^LN||96.8|[degF]^FARENHEIT^UCUM|||||F|||20141123201150

Transferred to/from ICU

If a patient is transferred to or from the ICU during their visit, NDHHS wants to know about it.

- OBX|15|CWE|397821002^Transfer to ICU^SCT||31874001^True^SCT||||||F|||20141123205531

Influenza

- Influenza A and B Culture, Rapid Method
  - OBX|12|CWE|48310-7^Influenza A Test Result^LN||10828004^POSITIVE^SCT||||||F|||20141123205531
  - OBX|12|CWE|38382-8^Influenza B Test Result^LN||260385009^NEGATIVE^SCT||||||F|||20141123205531
- Flu A, B Rapid EIA and Culture Combo
  - OBX|12|CWE|46082-4^INFLUENZA A RAPID AG^LN||260385009^NEGATIVE^SCT||||||F|||20141123205531
  - OBX|12|CWE|46083-2^INFLUENZA B RAPID AG^LN||10828004^POSITIVE^SCT||||||F|||20141123205531
- Influenza Type A/B RT-PCR w/ RFLX
  - OBX|12|CWE|34487-9^INFLUENZA A RNA, PCR^LN||10828004^POSITIVE^SCT||||||F|||20141123205531
  - OBX|12|CWE|40982-1^INFLUENZA B RNA, PCR^LN||260385009^NEGATIVE^SCT||||||F|||20141123205531

RSV

- RSV CULTURE,RAPID
  - OBX|15|CWE|17520-8^RSV CULTURE^LN||10828004^POSITIVE^SCT||||||F|||20141123205531
- Respiratory Syncytial Virus (RSV) RNA, Qualitative Real-Time PCR
  - OBX|15|CWE|40988-8^RSV RNA,QL,PCR^LN||10828004^POSITIVE^SCT||||||F|||20141123205531
- Respiratory Syncytial Virus (RSV) Antigen, EIA
  - OBX|15|CWE|33045-6^RSV AG, EIA^LN||10828004^POSITIVE^SCT||||||F|||20141123205531

Respiratory Virus Panel

- Respiratory Virus Panel, Adult
  - OBX|15|CWE|5041-9^ADENOVIRUS AB^LN||10828004^POSITIVE^SCT||||||F|||20141123205531
  - OBX|15|CWE|5256-3^M. PNEUMONIAE IGM AB^LN||10828004^POSITIVE^SCT||||||F|||20141123205531
  - OBX|15|CWE|5229-0^INFLUENZA TYPE A AB^LN||10828004^POSITIVE^SCT||||||F|||20141123205531
  - OBX|15|CWE|5230-8^INFLUENZA TYPE B AB^LN||10828004^POSITIVE^SCT||||||F|||20141123205531
- Respiratory Virus PCR Panel III
  - OBX|15|CWE|40988-8^RSV RNA, QL, PCR^LN||10828004^POSITIVE^SCT||||||F|||20141123205531
  - OBX|15|CWE|34487-9^INFLUENZA A RNA, PCR^LN||10828004^POSITIVE^SCT||||||F|||20141123205531
  - OBX|15|CWE|40982-1^INFLUENZA B RNA, PCR^LN||10828004^POSITIVE^SCT||||||F|||20141123205531
  - OBX|15|CWE|29908-1^PARAINFLUENZA 1 RNA^LN||10828004^POSITIVE^SCT||||||F|||20141123205531
  - OBX|15|CWE|29909-9^PARAINFLUENZA 2 RNA^LN||10828004^POSITIVE^SCT||||||F|||20141123205531
  - OBX|15|CWE|29910-7^PARAINFLUENZA 3 RNA^LN||10828004^POSITIVE^SCT||||||F|||20141123205531
  - OBX|15|CWE|39528-5^ADENOVIRUS DNA, QL PCR^LN||10828004^POSITIVE^SCT||||||F|||20141123205531

White Blood Count

- OBX|30|NM|26464-8^White Blood Count^LN||128343|uL^MicroLiter [SI Volume Units]^UCUM|||||F

Hemoglobin A1C

- OBX|14|NM|41995-2^HA1C Test Result^LN||5.0|g/dL^Grams Per DeciLiter [Mass Concentration Units]^UCUM|||||F|||20141123205531

Troponin

- OBX|14|NM|10839-9^Troponin^LN||0.05|ng/mL^Nanograms Per MiliLiter [Mass Concentration Units]^UCUM|||||F|||20141123205531

Lipid Panel

- HDL Cholesterol
  - OBX|14|NM|2085-9^HDL CHOLESTEROL^LN||50.0|mg/dL^Milligrams Per DeciLiter [Mass Concentration Units]^UCUM|||||F|||20141123205531
- LDL Cholesterol
  - OBX|14|NM|13457-7^LDL CHOL,CALCULATED^LN||150.0|mg/dL^Milligrams Per DeciLiter [Mass Concentration Units]^UCUM|||||F|||20141123205531
- Cholesterol
  - OBX|14|NM|2093-3^CHOLESTEROL^LN||200.0|mg/dL^Milligrams Per DeciLiter [Mass Concentration Units]^UCUM|||||F|||20141123205531
- Triglycerides
  - OBX|14|NM|2571-8^TRIGLYCERIDES^LN||300.0|mg/dL^Milligrams Per DeciLiter [Mass Concentration Units]^UCUM|||||F|||20141123205531

Treating Facility Location

Physical location (address) for the treating facility identified in this message

- OBX|1|XAD|SS002^TREATING FACILITY LOCATION^PHINQUESTION||123 Main St^^Whoville^NE^99999^US^C^^31999||||||F|||20141123200110

Treating Facility Type / Visit Type

Facility type for the treating facility identified in this message

- OBX|2|CWE|SS003^^PHINQUESTION||261QE0002X^Emergency Care^HCPTNUCC||||||F

Concept Code	Preferred Concept Name	Code Authorizing Body	Resulting Value
261QE0002X	Emergency Care	HCPTNUCC	261QE0002X^Emergency Care^HCPTNUCC
261QM2500X	Medical Specialty	HCPTNUCC	261QM2500X^Medical Specialty^HCPTNUCC
261QP2300X	Primary Care	HCPTNUCC	261QP2300X^Primary Care^HCPTNUCC
261QU0200X	Urgent Care	HCPTNUCC	261QU0200X^Urgent Care^HCPTNUCC

Triage Note

This is the initial triage assessment of the patient and history of present illness, by a nurse or doctor. It is the nurse or doctor's interpretation of the patient's chief complaint. This should **NOT** be a dropdown list item and should be free text, limited to the nurse/doctor's interpretation and assessment of patient's complaint and history of present illness. Alternate LOINC codes may be used to differentiate between ED, inpatient, and outpatient. Element is RE.

Triage Note: ED dataset

- `OBX|7|TX|54094-8^EMERGENCY DEPARTMENT TRIAGE NOTE^LN||Pain a recurrent cramping sensation.||||||F|||201102091114`

Triage Note: Inpatient and Outpatient datasets

- `OBX|7|TX|75500-9^TRIAGE NOTE^LN||Pain a recurrent cramping sensation.||||||F|||201102091114`

Weight - Initial

Initial measured body weight of the patient. The LOINC to be used in OBX-3 is 3141-9. OBX-5 must be a numeric value. The unit of measure must also be specified in OBX-6 for weight/mass. See OBX-6: Units.

- `OBX|3|NM|3141-9^BODY WEIGHT MEASURED^LN||215|[lb_av]^pound [mass]^UCUM|||||F|||20110217`
- `OBX|3|NM|3141-9^BODY WEIGHT MEASURED^LN||97.5224| kg^KiloGram [SI Mass Units]^UCUM |||||F|||20110217`

Procedure (PR1) Examples

For these procedures, all of the codes need to change to a CPT-4, ICD9, or ICD10.

Blood Culture

- `PR1|1||9052^Culture-blood^I9CP||20141123205531`

Blood Gas

- Measurement of systemic arterial blood gases
  - `PR1|2||8965^Arterial bld gas measure^I9CP|| 20141123205531`
- Measurement of mixed venous blood gases
  - `PR1|2||8966^Mix venous bld gas meas^I9CP|| 20141123205531`

Chest X-Ray

- Routine chest x-ray, so described
  - `PR1|3||8744^Routine chest x-ray^I9CP||20141123205531`
- Other chest x-ray
  - `PR1|3||8749^Chest x-ray NEC^I9CP||20141123205531`

Isolation

- Admission to protect individual from their surroundings or for isolation after contact with infectious diseases
  - `PR1|4||V07.0^Isolation^I9CP||20141123205531`

Ventilator

- Non-invasive mechanical ventilation
  - `PR1|7||9390^Non-invasive mech vent^I9CP||20141123205531`
- Continuous invasive mechanical ventilation of unspecified duration
  - `PR1|7||9670^Con inv mec ven-unsp dur^I9CP||20141123205531`
- Continuous invasive mechanical ventilation for less than 96 consecutive hours
  - `PR1|7||9671^Cont inv mec ven <96 hrs^I9CP||20141123205531`
- Continuous invasive mechanical ventilation for 96 consecutive hours or more
  - `PR1|7||9672^Cont inv mec ven 96+ hrs^I9CP||20141123205531`

Additional Examples

A04 EMERGENCY DEPARTMENT REGISTRATION; NO UPDATES;

In the following example, a non-Hispanic white female, 67 years old, visits the Nebraska Hospital emergency department with an infected abrasion on her forearm. The Medical Record Number, 20060012168, is sent for the patient identifier. Since this is an Emergency Department visit, PV1-44 reflects the time the patient registered in the Emergency Department. The Admit Reason is coded in ICD-9. The original provider of the data, Nebraska Hospital, is captured in the EVN-7. The facility location and visit type was provided by Nebraska Hospital. The additional required elements must be supplied in subsequent update or discharge ADT messages.

```
MSH|^~\&||NEHOSP^9876543210^NPI||SSEDON|201102091114||ADT^A04^ADT_A01|201102091114-0078|P|2.5.1
EVN||201102091114|||||NEHOSP^9876543210^NPI
PID|1||20060012168^^^^MR||~^^^^^^S||19440527|F||2106-3^White^CDCREC|^^^NE^68541||||||||||2186-5^Not
Hispanic^CDCREC|||||||N
PV1||E||E|||||||||||||20110209_0064^^^^VN|||||||||||||||||||||||||20110217144208
PV2|||9131^ABRASION FOREARM-INFECT^I9CDX|||||||||||||||||||||||||||||P^PUBLIC TRANSPORTATION^HL70430
OBX|1|XAD|SS002^TREATING FACILITY LOCATION^PHINQUESTION||^^^13^30341^USA^C||||||F|||201102091114
OBX|2|CWE|SS003^FACILITY / VISIT TYPE^PHINQUESTION||1108-0^EMERGENCY DEPARTMENT^HSLOC||||||F|||201102091114
OBX|3|NM|21612-7^AGE TIME PATIENT REPORTED^LN||67|a^YEAR^UCUM|||||F|||201102091114
```

A04 EMERGENCY DEPARTMENT REGISTRATION FOLLOWED BY A08 UPDATE

In the next example, a non-Hispanic black male, 52 years old, visits the Nebraska Clinic with cough and ear pain. Nebraska Clinic does not transmit Medical Record Number, so it uses a unique patient identifier of 95101100001, in PID-3. The chief complaint was sent as free text and an admitting diagnosis was sent in the DG1 segment, coded in ICD-9. This example also illustrates how data is to be handled when there is a parent-child relationship between health care facilities. The original provider of the data, Nebraska Clinic (child), is captured in the EVN-7, but the sender of the data, Nebraska Hospital (parent) is captured in MSH-4.

```
MSH|^~\&||NEHOSP^9876543210^NPI||SSEDON|20110217144317||ADT^A04^ADT_A01|E100648329|P|2.5.1
EVN||20110217144317|||||NECLINIC^0133195934^NPI
PID|1||95101100001^^^^PI||~^^^^^^S||19590812|M||2054-5^Black or African
American^CDCREC|^^^29^65101||||||||||2186-5^Not Hispanic^CDCREC
PV1||E||E||||||||||1|||||8399193^^^^VN|||||||||||||||||||||||20110217144208
PV2|||||||||||||||||||||||||||||||||C^CAR^HL70430
DG1|1||4739^CHRONIC SINUSITIS NOS^I9CDX||A
OBX|1|NM|21612-7^AGE TIME PATIENT REPORTED^LN||52|a^YEAR^UCUM|||||F|||201102171443
OBX|2|CWE|8661-1^CHIEF COMPLAINT:FIND:PT:PATIENT:NOM:REPORTED^LN||^^^^^^^^HEADACHE FOR 2 DAYS
OBX|1|XAD|SS002^TREATING FACILITY LOCATION^PHINQUESTION||^^^13^30341^USA^C||||||F|||201102091114
OBX|2|CWE|SS003^FACILITY / VISIT TYPE^PHINQUESTION||1108-0^EMERGENCY DEPARTMENT^HSLOC||||||F|||201102091114
```

Continuing the previous example, a non-Hispanic black male, 52 years old, visits the Nebraska Clinic with cough and ear pain. Nebraska Clinic wants to update the receiving system with new information about the same patient and the same visit. The Visit Number and Admit Date/Time have not changed; but, the Message Date/Time and Message Control ID have. So, an A08 message is used to transmit the additional information: Temperature, Blood Oxygen Level, and Final Diagnosis.

```
MSH|^~\&||CITY GENL HOSP^9876543210^NPI||SSEDON|20110217145139||ADT^A08^ADT_A01|E100648353|P|2.5.1
EVN||20110217144317|||||NECLINIC^0133195934^NPI
PID|1||95101100001^^^^PI||~^^^^^^S||19590812|M||2054-5^Black or African
American^CDCREC|^^^29^65101||||||||||2186-5^Not Hispanic^CDCREC
PV1||E||E|||||||||||1|||||8399193^^^^VN|||||||||||||||||||||||20110217144208
DG1|1||4739^CHRONIC SINUSITIS NOS^I9CDX|||A
DG1|2||04100^STREPTOCOCCUS UNSPECF^I9CDX|||F
OBX|1|NM|21612-7^AGE TIME PATIENT REPORTED^LN||52|a^YEAR^UCUM|||||F|||20110217145139
OBX|2|CWE|8661-1^CHIEF COMPLAINT:FIND:PT:PATIENT:NOM:REPORTED^LN||^^^^^^^^HEADACHE FOR 2 DAYS
OBX|3|NM|11289-6^BODY TEMPERATURE^LN||100.1|[degF] ^FARENHEIT^UCUM||A|||F|||20110217145139
OBX|4|NM|59408-5^OXYGEN SATURATION^LN||91|% ^PERCENT^UCUM||A|||F|||20110217145139
```

A04 EMERGENCY DEPARTMENT REGISTRATION; A01 INPATIENT ADMISSION; A03

DISCHARGE INCLUDING PATIENT DEATH

In the next example, a non-Hispanic white female, 43 years old, visits the Other Regular Medical Center emergency department with a chief complaint of a stomachache. The chief complaint was sent as free text and the admitting diagnosis was coded in a DG1 segment.

```
MSH|^~\&||OTHER REG MED CTR^9182736450^NPI||SSEDON|201102171531||ADT^A04^ADT_A01|201102171531956|P|2.5.1
EVN||201102171531||||| OTHER REG MED CTR^9182736450^NPI
PID|1||FL01059711^^^^PI||~^^^^^^S||19680315|F||2106-3^White^CDCREC|^^^12^33821||||||||||2186-5^Not
Hispanic^CDCREC
PV1||E||E|||||||||||7|||||V20220217-00274^^^^VN|||||||||||||||||||||||201102171522
DG1|1||78900^ABDMNAL PAIN UNSPCF SITE^I9CDX|||A
OBX|1|CWE|8661-1^CHIEF COMPLAINT:FIND:PT:PATIENT:NOM:REPORTED^LN||^^^^^^^^Stomach Ache
```

Continuing the example, the same non-Hispanic white female, 43 years old, visits the Other Regular Medical Center emergency department with a chief complaint of a stomach ache. The patient is suspect for appendicitis and is admitted as an inpatient. The patient has also reported that she has had a stomach ache since the 15th of February. The patient class (PV1.2) is changed to Inpatient. Admit Date/Time (PV1.44) is updated with the admission date and time.

In this particular case, visit number (PV1.19) has remained the same. However, it is recognized that some insurance companies require the visit number to be changed when a patient is admitted from the emergency department.

```
MSH|^~\&||OTHER REG MED CTR^9182736450^NPI|||201102171658||ADT^A08^ADT_A01|201102171658076|P|2.5.1
EVN||201102171658|||||OTHER REG MED CTR^9182736450^NPI
PID|1||FL01059711^^^^PI||~^^^^^^S|||F||2106-3^White^CDCREC|^^^12^33821||||||||||2186-5^Not Hispanic^CDCREC
PV1||I||E|||||||||||7|||||V20220217-00274^^^^VN|||||||||||||||||||||||201102171656
DG1|1||78900^ABDMNAL PAIN UNSPCF SITE^I9CDX|||A
OBX|1|CWE|8661-1^CHIEF COMPLAINT:FIND:PT:PATIENT:NOM:REPORTED^LN||^^^^^^^^Stomach Ache
OBX|2|NM|11289-6^BODY TEMPERATURE^LN||99.1|[degF]^FARENHEIT^UCUM||A|||F|||201102171658
OBX|3|NM|59408-5^OXYGEN SATURATION^LN||95|%^PERCENT^UCUM||A|||F|||201102171658
OBX|4|TS|11368-8^ILLNESS OR INJURY ONSET DATE AND TIME^LN||20110215||||||F|||201102171658
```

Continuing the example, the same non-Hispanic white female, 43 years old, visits the Other Regular Medical Center emergency department with a chief complaint of a stomach ache. The patient has expired and this is indicated in PV1-36 (Code=20). The last final diagnosis will be used for the cause of death in the patient visit record. The patient's death is also indicated by the "Y" in PID-30 and the Date and Time of Death in PID-29. The discharge date/time (PV1-45) is sent with the A03 message type.

```
MSH|^~\&| |OTHER REG MED CTR^1234567890^NPI||SSEDON|201102172334||ADT^A03^ADT_A03|201102172334640|P|2.5.1
EVN||201102172334|||||OTHER REG MED CTR^1234567890^NPI
PID|1||FL01059711^^^^PI||~^^^^^^S |||F||2106-3^White^CDCREC|^^^12^33821||||||||||||2186-5^Not
Hispanic^CDCREC|||||||201102172334|Y
PV1||I||E||||||||||7|||||V20220217-00274^^^^VN|||||||||||||||||20|||||||201102171656|201102172334
PV2|||78907^ABDOMINAL PAIN, GENERALIZED^I9CDX
OBX|1|CWE|8661-1^CHIEF COMPLAINT:FIND:PT:PATIENT:NOM:REPORTED^LN||^^^^^^^^Stomach Ache
OBX|2|NM|21612-7^AGE TIME PATIENT REPORTED^LN||43|a^YEAR^UCUM|||||F|||201102171531
OBX|3|NM|11289-6^BODY TEMPERATURE^LN||99.1|[degF]^FARENHEIT^UCUM||A|||F|||201102171658
OBX|4|NM|59408-5^OXYGEN SATURATION^LN||95|%^PERCENT^UCUM||A|||F|||201102171658
OBX|5|TS|11368-8^ILLNESS OR INJURY ONSET DATE AND TIME^LN||20110215||||||F|||201102171658
DG1|1||78900^ABDMNAL PAIN UNSPCF SITE^I9CDX|||A
DG1|2||5409^ACUTE APPENDICITIS NOS^I9CDX|||W
DG1|3||5400^AC APPEND W PERITONITIS^I9CDX|||F
```

Data Types

The following data types are used to send elements to SSEDON. There are more data types available in HL7, but this guide will not cover them.

CE – Coded Element

The coded element data type (CE) is as follows. Any element of this type must follow this structure.

#	Description	DT	Usage	Example
1	Identifier (LOINC Code)	ST	R	630-4
2	Description	ST	R	Urine culture
3	System used (LN = LOINC)	ID	R	LN (see list)
4-6	Multiple – NOT SUPPORTED	---	X	

The description (CE-2) must be provided in each CE element.
The code sets as identified for each coded element in this implementation guide should be used in each case and must be indicated in the system used (CE-3) sub-element.

- `8302-2^BODY HEIGHT^LN`
- A^Ambulance^0430
- 2106-3^White^CDCREC

CWE – Coded With Exception

The coded with exception (CWE) data type is as follows. Any element of this type must follow this structure.

#	Description	DT	Usage	Example
1	Identifier (LOINC Code, HL7 table code, etc.)	ST	O	630-4
2	Description	ST	CR	Urine culture
3	System used (LN = LOINC)	ID	CR	LN
4	Alternate Identifier (Local code)	ST	O	UC
5	Alternate description	ST	CR	Urine culture
6	Alternate system (L = Local)	ID	CR	L
7	Coding System Version (for #3)	ST	O	Version2.0
8	Alternate coding system version (for field #6)	ST	O	1.1
9	Original Text	TX	CR	My back hurts
10-22	Multiple – NOT SUPPORTED	---	X	

If the identifier is provided in CWE-1 then the description (CWE-2) and the system used (CWE-3) are required.
If the identifier (CWE-1), description (CWE-2) and system used (CWE-3) are not provided then either the alternate identifier, description and system are required or the original text (CWE-9) is required.

The description in either CWE-2 or CWE-5 is required if the related identifier is provided.
The code sets as identified for each coded element in this implementation guide should be used in each case and must be indicated in CWE-3 system used sub-element.

- `8302-2^BODY HEIGHT^LN`
- `^^^^^^^^My Back Hurts`
- 261QE0002X^Emergency Care^HCPTNUCC^^^^2

CX – Extended Composite ID with Check Digit

#	Description	DT	Usage	Default/Information
1	ID Number	ST	R	Varies
2	Check Digit	ST	X	
3	Check Digit Scheme	ID	X	
4	Assigning Authority	HD	RE	
5	Identifier Type Code	ID	R	VN or MR or PI
6	Assigning Facility	HD	X	
7	Effective Date	DT	X	
8	Expiration Date	DT	X	
9	Assigning Jurisdiction	CWE	X	
10	Assigning Agency or Department	CWE	X	

*Nebraska differs from the national standards. See National Standards vs. Nebraska SSEDON Standards.

CX-5 shall be set to VN to identify the number being sent is the patient visit number when used for PV1-19. It shall be MR or PI for medical record number/patient identifier when used in PID-3.

- `|123456A^^^Acme Hosp&95456464&CLIA^VN|`
- `|123456A^^^Acme Hosp&95456464&CLIA^MR|` or `|123456A^^^ Acme Hosp&95456464&CLIA ^PI|`

DT – Date

This is the Date data type. Its format is YYYYMMDD with only the YYYY being required.

- `|20141021|`

DTM – Date/Time

This is the Date/Time data type.

The format is YYYYMMDDHHMMSS with a + or – followed by the time zone offset, ZZZZ but the precision can be further refined (e.g., YYYY[MM[DD[HH[MM[SS[.S[S[S[S]]]]]]]]][+/-ZZZZ]).

- `|201410211629.0005-0500|`

HD – Hierarchic Designator

This is the hierarchic designator. It identifies facilities and applications.

#	Description	DT	Usage	Example
1	Namespace ID	IS	R*	e.g., NameOfLab
2	Universal ID	ST	R	Facility OID or CLIA value
3	Universal ID Type	ID	R	CLIA or ISO **only** (see list)

*Nebraska differs from the national standards. See National Standards.

ID – Coded Value for HL7-Defined Tables

#	Description	DT	Usage	Example
1	Value	ST	R	Value comes from an HL7 defined table

IS – Coded Value for User-Defined Tables

#	Description	DT	Usage	Example
1	Value	ST	R	Value comes from a user-defined table

MSG – Message Type

This is the message type data type. It is comprised of three parts:

#	Description	DT	Usage	Example
1	Message Code	ID	R	ADT
2	Trigger Event	ID	R	A08
3	Message Structure	ID	R	ADT_A01

There are 4 trigger events: A01, A03, A04, and A08. There are 2 message structures: A01 and A03.

- Admission Message: `|ADT^A01^ADT_A01|`
- Registration Message: `|ADT^A04^ADT_A01|`
- Update Message: `|ADT^A08^ADT_A01|`
- Discharge Message: `|ADT^A03^ADT_A03|`

NM – Numeric

#	Description	DT	Usage	Example
1	Value	ST	R	Value is a number. Optional leading + or - and optional decimal point (e.g., 1 or -1.27)

PT – Processing Type

#	Description	DT	Usage	Default or Information
1	Processing ID	ID	R	P
2	Processing Mode	ID	O	T

- PT-1: https://phinvads.cdc.gov/vads/ViewCodeSystem.action?id=2.16.840.1.113883.12.103
- PT-2: https://phinvads.cdc.gov/vads/ViewCodeSystem.action?id=2.16.840.1.113883.12.207

SI – Sequence ID

#	Description	DT	Usage	Example
1	Value	NM	R	Non-negative integer; 1, 2, 3, etc.

ST – String Data

#	Description	DT	Usage	Example
1	Value	---	R	It's just text, like this.

TS – Time Stamp

#	Description	DT	Usage	Example
1	Value	DTM	R	201503181327

VID – Version Identifier

#	Description	DT	Usage	Default or Information
1	Version ID	ID	R	2.5.1
2	Internationalization Code	CE	O	DO NOT SEND
3	International Version ID	CE	O	DO NOT SEND

XAD – Extended Address

#	Description	DT	Usage	Example
1	Street Address	SAD	RE	DO NOT SEND
2	Other Designation	ST	RE	
3	City	ST	R*	RE
4	State or Province	ST	R*	RE
5	Zip or Postal Code	ST	R*	RE
6	Country	ID	RE	
7	Address Type	ID	RE	
8	Other Geographic Designation	ST	O	
9	County/Parish Code	IS	R*	RE
10	Census Tract	IS	RE*	
11-14	Multiple – NOT SUPPORTED	ID	X	

*Nebraska differs from the national standards. See National Standards vs. Nebraska SSEDON Standards.